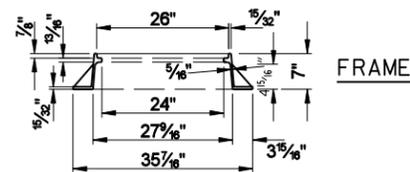
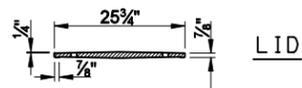
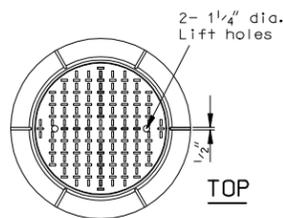
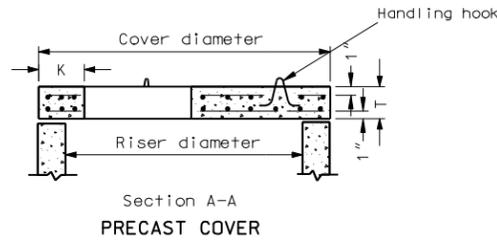
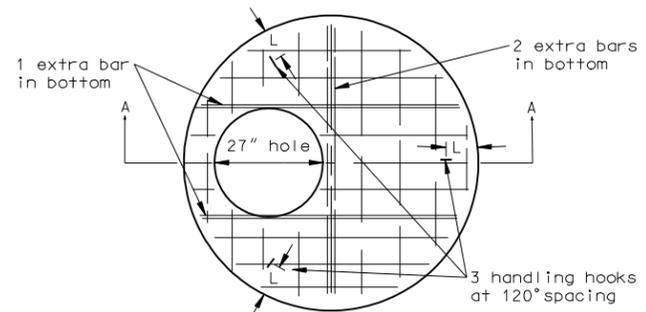
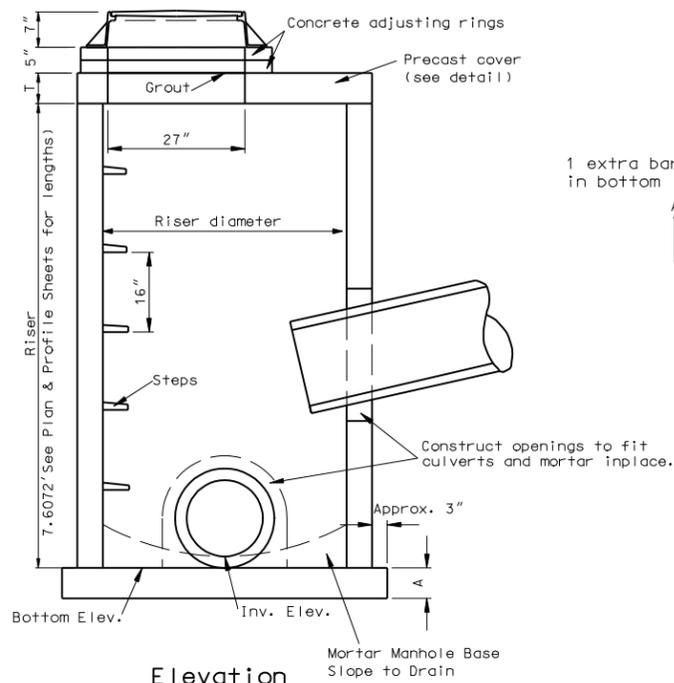


# MANHOLE DETAILS

D-722-5



**MANHOLE CAST IRON RING & COVER**

Lid - Wt. 118 Lbs.  
Frame - Wt. 131 Lbs.

**PRECAST MANHOLE COVERS**

PIPE DIAMETER	COVER DIAMETER	WEIGHT OF SECTION	T	K	L	BOTTOM BARS	TOP BARS
42"	51"	800#	6"	6"	7"	#4 at 6"	
48"	58"	1110#	6"	6"	8"	#4 at 6"	
54"	65"	1950#	8"	6"	8"	#4 at 6"	
60"	72"	2470#	8"	7"	9"	#4 at 6"	#3 at 6"
66"	79"	3050#	8"	7"	9"	#4 at 6"	#3 at 6"
72"	86"	3680#	8"	8"	10"	#4 at 6"	#3 at 6"
78"	93"	4360#	8"	8"	10"	#4 at 4"	#3 at 4"
84"	100"	5100#	8"	9"	11"	#4 at 4"	#3 at 4"
90"	107"	5890#	8"	9"	11"	#4 at 4"	#3 at 4"
96"	114"	6730#	8"	9"	11"	#4 at 4"	#3 at 4"
102"	121"	7630#	8"	9"	12"	#4 at 4"	#3 at 4"
108"	128"	12460#	12"	10"	12"	#4 at 4"	#3 at 4"
120"	140"	15500#	12"	11"	13"	#4 at 4"	#3 at 4"

Top and bottom bars run in both directions.

Note: Method of measurement for manholes shall be as follows: The contract unit price bid for manholes shall include the furnishing and installing the following:

1. Cast iron ring and cover or beehive casting & cover
2. Precast cover
3. Concrete base
4. Concrete adjusting rings

The item "Manhole Riser" shall include the furnishing & installing of the required length of riser & cast iron steps.  
Mortar to be included in the price bid for manholes.

**MANHOLE BASES**

PIPE DIAMETER	BASE DIAMETER	WEIGHT OF SECTION	A	BARS
42"	58"	1380#	6"	#3 at 6"
48"	66"	1785#	6"	#3 at 6"
54"	72"	2125#	6"	#3 at 6"
60"	78"	3320#	8"	#3 at 6"
66"	86"	4030#	8"	#3 at 6"
72"	92"	4610#	8"	#3 at 6"
78"	100"	5460#	8"	#3 at 6"
84"	107"	6230#	8"	#3 at 6"
90"	114"	7070#	8"	#3 at 6"
96"	120"	7850#	8"	#3 at 6"
102"	127"	13200#	12"	#3 at 6"
108"	132"	14270#	12"	#3 at 6"
120"	148"	17925#	12"	#3 at 6"

Notes: Bottoms of manholes shall be cut or precast square to fit the base grout joint between base and wall with cement mortar. The contractor may, if he so desires, construct the manholes lower than plan grade and bring the casting to grade using precast adjusting rings in a manner satisfactory to the engineer in the field.

The contractor shall have the option of using precast or poured in place bases.

Precast bases shall be reinforced as shown in listing for each size base.

The aggregate size shall be approved by the engineer.

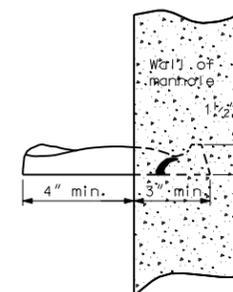
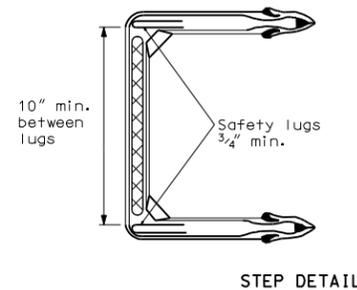
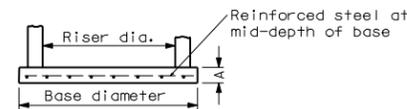
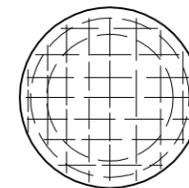
Precast barrels and risers shall be constructed in accordance with AASHTO M-199.

Manhole steps shall be corrosion resistant and shall have a minimum vertical load resistance of 400 pounds and a pull-out resistance of up to 1000 pounds. Configuration of the steps shall be approved by the engineer.

The contractor may, if he so elects, construct manholes of solid concrete block or brick. The materials shall be approved by the engineer in writing. The type of construction shall be as specified in section 722 of the Standard Specifications.

Other castings, similar in dimension and of equal or greater weight than that shown may be used if accepted by the engineer in writing.

Metal used in the manufacture of castings shall conform to AASHTO M-105, Class 35 B.



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-1-86	
REVISIONS	
DATE	CHANGE
08-03-87	Note
06-10-93	Manhole revision
06-26-03	Layout revision
12-01-04	PE stamp added
06-13-06	Revised manhole frame & cover

This document was originally issued and sealed by MARK S GAYDOS, Registration Number PE-4518, on 06/13/06 and the original document is stored at the North Dakota Department of Transportation